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EXAMINER

BAYARD, EMMANUEL

ART UNIT	PAPER NUMBER
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2631

DATE MAILED: 11/18/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/553,735

Applicant(s)

SHENOI, KISHAN

Examiner

Emmanuel Bayard

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 25 August 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-43 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-43 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

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### **DETAILED ACTION**

1. This is in response to amendment filed on 8/25/03 in which claims 1-43 are pending. The applicant's amendments have been fully considered but they are moot based on the new ground of rejection. (See new rejection below and response to amendment).

#### ***Claim Rejections - 35 USC § 112***

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

3. Claims 1-13 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

4. Claim 1 recites the limitation "the maximum correlator value" in line 15. There is insufficient antecedent basis for this limitation in the claim.

Claims 2-13 are likewise rejected because they depend on a base rejected claim.

#### ***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who

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has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371© of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) do not apply to the examination of this application as the application being examined was not (1) filed on or after November 29, 2000, or (2) voluntarily published under 35 U.S.C. 122(b). Therefore, this application is examined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

6. Claims 1-43 are rejected under 35 U.S.C. 102(e) as being anticipated by Naden et al U.S. Patent No 5,999,561.

As per claim 1, Naden et al discloses a method for tracking CDMA pilot channel signal to discipline an oscillator comprising: down converting an RF signal from a center frequency  $F_r$  to an intermediate center frequency  $F_i$  (see figs. 9, 11 element 1104 and col.16, lines 45-46 and col.20, lines 9-111 ) where  $f_i$  is greater than or equal to a CDMA chip rate  $F_c$  wherein down converting includes incorporated bandpass filtering (see col.110, lines 59-63 and col.111, lines 33-35 and col.112, lines 7-13 and col.119, lines 23-27 ) to remove extraneous signals while passing said CDMA pilot channel signal; converting a signal format from analog to digital using a single analog to digital converter (see figs. 9, 11 element 907 and col.16, line 47) employing a sampling rate of  $F_s$  to create a signal sampling signal  $S_n$ ; employing correlation circuit (see figs.9, 11 element 911 and col.16, lines 65-67 and col.17, lines 21, 30-32 and col.20, lines 18-20) to establish a correlation between the  $S_n$  locally generated versions of I-channel and Q channel PN

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signals respectively; generating an estimating of an error generating an estimating of a frequency error (see col.10, lines 15-16, 43-55 and col.30, lines 58-60) of the oscillator using correlation values corresponding to  $(2M + 1)$  time shifts where a time shift of  $K$  corresponds to a time shift that provides the maximum correlation value (see col.32, lines 60-65 and col.33, lines 53-67) and  $M$  is greater or equal to 1.

As per claims 2-4, the method of Naden et al does include a sampling rate,  $F_s$ , an intermediate center frequency,  $f_l$ , and a chip rate,  $f_c$  (see col.110, lines 59-63 and col.111, lines 33-35 and col.112, lines 7-13 and col.119, lines 23-27).

As per claim 5, the method of Naden et al does include a single accumulator for generating both real and imaginary (see col.61, lines 25, 49).

As per claim 6, the method of Naden et al does include monitoring of both positive overflows and negative overflows (see col.60, lines 63-67 and col.61, lines 1-20).

As per claim 7, the method of the method of Naden et al does include correlation process instead of matched filter (see fig.9 element 911).

As per claim 8, the method of the method of Naden et al does includes a receiver (see fig.9).

As per claims 9-10 and 13, the method of the method of Naden et al does includes the correlation computation of time shift lags (see col.20, lines 18-25).

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As per claims 11-12, the method of the method of Naden et al inherently includes background correlation .

As per claim 14, Naden et al discloses an apparatus to track a pilot signal, comprising: a correlator circuit adapted to compute a complex correlation between a received version of the pilot signal and locally generated versions of I-channel and Q-channel PN signals, respectively (see figs 9, 11 element 911 and col.16, lines 64-67 and col.17, lines 1-44 and col.20, lines 18-25).

As per claim 15, the apparatus of Naden et al does includes a buffer (see col.40, line 45). Note that a FPGA is known in the art as buffering device or a storage device. Therefore the buffer of Naden et al is considered as a FPGA.

As per claim 16, the method of Naden et al does include a single accumulator for generating both real and imaginary (see col.61, lines 25, 49).

As per claims 17-18, the method of Naden et al does include a signal processor having a DSP (see col.45, line 37).

As per claim 19, the method of Naden et al does include a signal processor for averaging correlations values (col.16, lines 64-67 and col.17, lines 1-44 and col.20, lines 18-25).

As per claim 20, the method of Naden et al inherently includes parallel correlator.

As per claim 21, the method of Naden et al inherently includes a background correlation .

As per claim 22, the method of Naden et al inherently includes a CDMA pilot.

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As per claims 24 and 34, Naden et al discloses a method for tracking a pilot channel comprising: disciplining an oscillator (see figs.9, 11, 32 elements 927, 1110, 3250 and col.45, line 43 and col.46, line 65) including generating a spectrum shaped channel pilot signal (see col.1, line 16 and col.13, line 61)  $Y(n)$  from a chip-rate PN sequence by: over sampling (see col.28, lines 40-45 and col.49, lines 1-8 and col.55, lines 32-35 ); passing  $A(n)$  through a first FIR filter (see fig. 11 element 1116I and col.31, lines 1-3 and col.51, lines 11-15) whose impulse response coefficients are  $G(n)$  to yield a signal  $B(n)$ ; filtering  $B(n)$  with a second filter (see fig. 11 element 1116Q and col.31, lines 1-3 and col.51, lines 11-15) to yield the spectrum shaped channel pilot  $Y(n)$ .

As per claims 25, 27, the method of Naden et al does include an I channel (see fig.11 element 1116I).

As per claim 26, the method of Naden et al does include monitoring of both positive overflows and negative overflows (see col.60, lines 63-67 and col.61, lines 1-20)

As per claim 28, the method of Naden et al does include baseband signal (see col.16, line 50)).

As per claim 29, the method of Naden et al does include VXCO that is a phase locked to a reference frequency (see fig.9).

As per claim 30, the method of Naden et al does include a correlation (fig.9 element 911).

As per claim 31, the method of Naden et al inherently does not include a matched filter.

As per claim 32, the method of Naden et al does include a receiver (see fig.9).

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As per claim 33, the method of Naden et al does include an I channel pilot (see fig.11 element 1116I).

As per claim 35, the method of Naden et al does include a FPGA (see col.40, line 45).

As per claims 36-37, the method of Naden et al does include a signal processor having a DSP (see col.45, line 37).

As per claim 38, the method of Naden et al does include an A/D converter (see fig.9 element 907).

As per claim 39, the method of Naden et al inherently includes a 4-point FIR filter .

As per claim 40, the method of Naden et al inherently includes a 4-point FIR filter therefore a 48 point FIR filter

As per claim 41, the method of Naden et al does include a CDMA channel (see col.3, line 3).

As per claim 42, the method of Naden et al inherently includes a background correlator (.

As per claim 43, the method of Naden et al does include a receiver (see fig.9).

### *Conclusion*

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.



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Dent et al U.S. Patent No 6,195,399 B1 teaches a method and apparatus for converting a wideband IF signal.

Ciccarelli et al U.S. Patent No 6,359,940 B1 teaches a method and apparatus for down converting signals transmitted.

Dowling U.S. Patent No 6,434,186 B2 teaches a priority channel.

Rouquette et al U.S. Patent No 5,920,589 teaches a direct sequence spread spectrum DPS system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Emmanuel Bayard whose telephone number is (703) 308-9573. The examiner can normally be reached on Monday-Thursday from 8:00 AM - 5:30 PM. The examiner can also be reached on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mohammad H. Ghayour, can be reached on (703) 306-3034. The fax phone number for this Group is (703) 872-9314.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 305-3800.



Emmanuel Bayard

Primary Examiner

November 14, 2003